

IN THE CLAIMS

The following is a complete claim listing including current amendments, cancellations, and additions:

1. (Original) A method of methanol steam reforming comprising:
contacting methanol and water vapor with a catalyst;
wherein the catalyst comprises a palladium on zinc oxide catalyst
wherein said catalyst has a pore volume and at least 20% of the catalyst's pore volume is composed of pores in the size range of 0.1 to 300 microns; and
forming hydrogen from the reaction of said methanol and water vapor at a rate of at least 1.5 mole methanol per gram catalyst per hour (1.5 mole methanol / (g catalyst) (hr)).
2. (Canceled)
3. (Canceled)
4. (canceled)
5. (Original) A method of alcohol steam reforming comprising:
contacting methanol and water with a catalyst;
wherein the catalyst comprises palladium or ruthenium on cerium-promoted zirconia or alumina; and
forming hydrogen from the reaction of said methanol and water vapor.
6. (Original) A method of alcohol steam reforming

comprising:

contacting methanol and water with a catalyst;
wherein the catalyst comprises a palladium-ruthenium alloy
on zirconia or alumina; and
forming hydrogen from the reaction of said methanol and
water vapor.

7. (Original) The method of claim 6 wherein the catalyst
comprises a higher weight percent of palladium than of ruthenium.

8. (Currently Added) The method of claim 1 wherein the
catalyst comprises 2 to 10 weight percent Pd.

9. (Currently Added) The method of claim 1 wherein the ZnO forms a
layer having a thickness of less than 40 μm on a large pore
support.

10. (Currently Added) The method of claim 1 wherein the
catalyst comprises a large pore support wherein the support
comprises a metal foam or metal felt.

11. (Currently Added) The method of claim 1 wherein the
catalyst has a pore volume of 30 to 95%.

12. (Currently Added) The method of claim 11 wherein at least
50% of the catalyst's pore volume is composed of pores in the
size range of 0.1 to 300 microns.

13. (Currently Added) The method of claim 1 wherein at least
50% of the catalyst's pore volume is composed of pores in the
size range of 0.3 to 200 microns.

14. (Currently Added) The method of claim 1 wherein at least 20% of the catalyst's pore volume is composed of pores in the size range of 1 to 100 microns.

15. (Currently Added) The method of claim 1 wherein the catalyst comprises a large pore support that has a corrugated shape.

16. (Currently Added) The method of claim 1 wherein the contact time is less than 1 sec.

17. (Currently Added) The method of claim 1 wherein the contact time is in the range of 10 to 500 msec.

18. (Currently Added) The method of claim 17 wherein the step of contacting methanol and water vapor with a catalyst is conducted at a temperature of 200 to 500 °C.

19. (Currently Added) The method of claim 16 wherein the step of contacting methanol and water vapor with a catalyst is conducted at a temperature of 200 to 500 °C.

20. (Currently Added) The method of claim 19 wherein methanol conversion is at least 50%.

21. (Currently Added) The method of claim 1 wherein the catalyst is disposed in a reaction chamber in a flow-by configuration.

22. (Currently Added) The method of claim 1 wherein the

catalyst is disposed in a reaction chamber that has a width less than 2 mm; and further wherein the reaction chamber is in thermal contact with a heat exchange chamber.

23. (Currently Added) The method of claim 23 wherein the reaction chamber and heat exchange chamber are adjacent and in an interleaved chamber orientation.

24. (Currently Added) The method of claim 23 wherein the heat exchange chamber has a width of less than 2 mm.

25. (Currently Added) The method of claim 21 wherein the catalyst is disposed in a reaction chamber that has a width less than 2 mm; and further wherein the reaction chamber is in thermal contact with a heat exchange chamber.

26. (Currently Added) The method of claim 25 wherein the catalyst comprises a porous support having a thickness of between 0.1 and 1 mm.

27. (Currently Added) The method of claim 1 wherein the step of contacting methanol and water vapor with a catalyst is conducted at a temperature of greater than 350 °C.

28. (Currently Added) The method of claim 18 wherein the step of contacting methanol and water vapor with a catalyst is conducted at a temperature of greater than 350 °C.

29. (Currently Added) The method of claim 25 wherein the step of contacting methanol and water vapor with a catalyst is conducted at a temperature of greater than 350 °C.

30. (Currently Added) The method of claim 21 wherein the step of contacting methanol and water vapor with a catalyst is conducted at a temperature of greater than 350 °C; and wherein the pressure drop through the reaction chamber is 20 psig or less.

31. (Currently Added) The method of claim 27 wherein the catalyst is disposed in a reaction chamber in a flow through configuration.

32. (Currently Added) The method of claim 21 wherein the catalyst comprises two pieces separated by a gap.

33. (Currently Added) The method of claim 32 wherein the reaction chamber that has a width less than 2 mm.